

WHAT IS CLAIMED IS:

- 1 1. A method of organizing a collection of objects, comprising:
2 segmenting a sequence of objects into object clusters based on
3 comparisons of successive object intervals to weighted measures of
4 cluster extent, and
5 comparisons of successive object intervals to weighted measures of
6 cluster object density.
- 1 2. The method of claim 1, wherein measures of cluster extent
2 correspond to spans of recorded generation times over which objects in the
3 clusters respectively extend.
- 1 3. The method of claim 1, wherein measures of cluster extent
2 correspond to spans of recorded generation locations over which objects in the
3 clusters respectively extend.
- 1 4. The method of claim 1, wherein measures of cluster object density
2 correspond to average measures of time intervals between successive objects in
3 the clusters.
- 1 5. The method of claim 1, wherein measures of cluster object density
2 correspond to averages of space intervals between successive objects in the
3 clusters.
- 1 6. The method of claim 1, wherein segmenting the object sequence
2 comprises merging consecutive objects into a given cluster until an interval
3 between a candidate object and a preceding object in the given cluster exceeds a
4 threshold computed based on a weighted measure of the extent of the given
5 cluster, at which point a new cluster is initiated with the candidate object.
- 1 7. The method of claim 1, wherein segmenting the object sequence
2 comprises merging consecutive objects into a given cluster until an interval
3 between a candidate object and a preceding object in the given cluster exceeds a
4 threshold computed based on a weighted measure of object density in the given
5 cluster, at which point a new cluster is initiated with the candidate object.

1 8. The method of claim 1, wherein weights applied to the measures of
2 cluster extent decrease with increasing cluster size.

1 9. The method of claim 1, wherein weights applied to the measures of
2 cluster object density decrease with increasing cluster size.

1 10. The method of claim 1, further comprising customizing at least one
2 of the weights applied to the measures of cluster extent based on an analysis of
3 objects in the cluster.

1 11. The method of claim 10, wherein at least one weight is customized
2 based on a fractal dimension estimate for context-related meta data associated
3 with objects in the collection.

1 12. The method of claim 1, further comprising customizing at least one
2 of the weights applied to the measures of cluster object density based on an
3 analysis of objects in the cluster.

1 13. The method of claim 12, wherein at least one weight is customized
2 based on a fractal dimension estimate for context-related meta data associated
3 with objects in the collection.

1 14. The method of claim 1, wherein segmenting the sequence of objects
2 further comprises comparing object density of a given cluster including a
3 candidate object with a weighted measure of object density for the given cluster
4 without the candidate object.

1 15. The method of claim 14, wherein measures of cluster object density
2 correspond to averages of time intervals between successive objects in the
3 clusters.

1 16. The method of claim 14, wherein measures of cluster object density
2 correspond to averages of space intervals between successive objects in the
3 clusters.

1 17. The method of claim 14, wherein the measure of object density
2 corresponds to a moving average density of objects.

1 18. The method of claim 14, wherein weights applied to the measures of
2 cluster object density decrease with increasing cluster size.

1 19. The method of claim 1, wherein objects are segmented beginning at
2 a first end of the object sequence.

1 20. The method of claim 19, wherein objects are further segmented
2 beginning at a second end of the object sequence.

1 21. The method of claim 1, wherein the sequence to be segmented
2 includes objects of the following types: text, audio, graphics, still images, video
3 and business events.

1 22. A system of organizing a collection of objects, comprising:
2 a segmentation engine operable to segment a sequence of objects into
3 object clusters based on
4 comparisons of successive object intervals to weighted measures of
5 cluster extent, and
6 comparisons of successive object intervals to weighted measures of
7 cluster object density.

1 23. A method of organizing a collection of objects, comprising:
2 segmenting objects from the collection into clusters;
3 extracting context-related meta data associated with the objects and
4 parsable into multiple levels of a name hierarchy; and
5 assigning names to clusters based on the extracted context-related meta
6 data corresponding to a level of the name hierarchy selected to distinguish
7 segmented clusters from one another.

1 24. The method of claim 23, wherein names are assigned to clusters
2 based on the extracted context-related meta data corresponding to a highest level
3 of the name hierarchy that distinguishes clusters from each other.

1 25. The method of claim 23, wherein the context-related meta data
2 corresponds to object generation times.

1 26. The method of claim 23, wherein the context-related meta data
2 corresponds to object generation locations.

1 27. The method of claim 26, wherein the context-related meta data
2 corresponds to recorded information relating to country, city, and state of object
3 generation.

1 28. The method of claim 23, wherein the context-related meta data
2 corresponds to both object generation times and object generation locations.

1 29. The method of claim 23, further comprising automatically naming
2 objects in a given cluster based on the name assigned to the given cluster.

1 30. The method of claim 29, wherein the objects in the given cluster are
2 named automatically in accordance with a chronological ordering of the objects in
3 the given cluster.

1 31. The method of claim 29, further comprising storing objects in the
2 given cluster in a tree structure organized by cluster and labeled in accordance
3 with the assigned names.

1 32. A system of organizing a collection of objects, comprising:
2 a segmentation engine operable to segment objects from the collection into
3 clusters; and

4 a naming engine operable to extract context-related meta data associated
5 with the objects and parsable into multiple levels of a name hierarchy, and assign
6 names to each cluster based on the extracted context-related meta data
7 corresponding to a level of the name hierarchy selected to distinguish segmented
8 clusters from one another.

1 33. A method of organizing a collection of objects, comprising:

2 accessing a sequence of objects segmented into clusters each including
3 multiple objects arranged in a respective sequence in accordance with context-
4 related meta data associated with the objects;
5 selecting for each object cluster at least two constituent objects
6 representative of beginning and ending instances in the corresponding object
7 sequence; and
8 graphically presenting the selected representative objects of each cluster.

1 34. The method of claim 33, further comprising graphically presenting a
2 stack of partially overlapping images representative of multiple objects in a cluster
3 in response to user input.

1 35. The method of claim 34, further comprising revealing an increased
2 portion of a given representative image in the stack in response to detection of a
3 user-controlled display icon positioned over the given representative image.

1 36. The method of claim 33, wherein the representative objects of any
2 given cluster are presented closer to each other than to the representative objects
3 of other clusters.

1 37. The method of claim 33, further comprising merging objects of one
2 cluster into an adjacent cluster in response to user input.

1 38. The method of claim 37, wherein objects of one cluster are merged
2 into an adjacent cluster in response to dragging and dropping of the objects to be
3 merged.

1 39. The method of claim 37, wherein the objects of the one cluster are
2 merged into the adjacent cluster in response to user selection of an icon for
3 merging the clusters.

1 40. The method of claim 33, further comprising presenting a graphical
2 representation of distributions of objects in the clusters.

1 41. The method of claim 40, wherein a object distribution for a given
2 cluster is presented as object instances plotted along an axis corresponding to a
3 scaled representation of the context-related extent spanned by the given cluster.

1 42. The method of claim 40, further comprising splitting a given cluster
2 in response to user selection of a point in the representation of the object
3 distribution presented for the given cluster.

1 43. The method of claim 40, further comprising automatically splitting a
2 given cluster into two or more clusters in response to user input.

1 44. The method of claim 43, wherein the given cluster is automatically
2 split into a user-selected number of sub-clusters.

1 45. The method of claim 43, wherein the given cluster is automatically
2 split based on relative sizes of intervals between successive objects in the given
3 cluster.

1 46. The method of claim 33, wherein the context-related meta data
2 corresponds to object generation times.

1 47. The method of claim 33, wherein the context-related meta data
2 corresponds to object generation locations.

1 48. The method of claim 33, wherein the segmented sequence includes
2 objects of the following types: text, audio, graphics, still images, video, and
3 business events.

1 49. The method of claim 33, further comprising graphically presenting
2 at least one link to an object of a cluster arranged in a sequence in accordance
3 with time-related meta data in a calendar format.

1 50. The method of claim 33, further comprising graphically presenting
2 at least one link to an object of a cluster arranged in a sequence in accordance
3 with location-related meta data in a map format.

1 51. A system of organizing a collection of objects, comprising a user
2 interface layout engine operable to:
3 access a sequence of objects from the collection segmented into clusters
4 each including multiple objects arranged in a respective sequence in accordance
5 with context-related meta data associated with the objects;
6 select for each object cluster at least two constituent objects representative
7 of beginning and ending instances in the corresponding object sequence; and
8 graphically present the selected representative objects of each cluster on a
9 screen with the representative objects of any given cluster presented closer to
10 each other than to the representative objects of other clusters.